

Claims

1. A hydrophilic, crosslinkable oligomer composition comprising
 - a) a first component oligomer comprising a plurality of polymerized monomer units having pendent, free-radically polymerizable functional groups,
5 and a plurality of polymerized monomer units having pendent, hydrophilic poly(alkylene oxide) groups; and
 - (b) a second component oligomer comprising a plurality of polymerized monomer units having pendent, free-radically polymerizable functional groups.
- 10 2. The oligomer composition of claim 1 wherein the composition is melt-processible at temperatures of 100°C or less.
3. The composition of claim 1 wherein said composition has a residual content of less than 2 weight %.
- 15 4. The composition of claim 1, wherein said oligomers a) and b) have an average degree of polymerization of less than 300.
5. The composition of claim 1 wherein each of said oligomers a) and b) have a degree
20 of polymerization of less than 300.
6. The composition of claim 1, wherein said pendent polyalkylene oxide groups of said first component oligomer is of the formula:
 $-(CH(R^1)-CH_2-O)_m-R^2$ wherein R^1 is a H or a C_1 to C_4 alkyl group, R^2 is H, a C_1 to C_4
25 alkyl group, aryl, or combinations thereof, and m is from 2 to 100.
7. The composition of claim 1, wherein said pendent poly(alkylene oxide) group is a poly(ethylene oxide) (co)polymer.
- 30 8. The composition of claim 1, wherein said pendent poly(alkylene oxide) group is a poly(ethylene oxide-co-propylene oxide) copolymer.

9. The composition of claim 1 wherein said first component oligomer further comprises plurality of polymerized monomer units having pendent photoinitiator groups.
10. The composition of claim 1 wherein said second component oligomer further
5 comprises plurality of polymerized monomer units having pendent photoinitiator groups.
11. The composition of claim 1 further comprising (c) a thermal- or photoinitiator.
12. The composition of claim 1 further comprising (c) a polymeric photoinitiator.
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13. The composition of claim 1 wherein said first oligomer having pendent unsaturated polymerizable groups is prepared by the reaction of an oligomer having a plurality of pendent reactive functional groups with an unsaturated compounds having co-reactive functional groups.
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14. The composition of claim 13 wherein said pendent reactive functional groups are selected from hydroxyl, amino, oxazolinyl, oxazolonyl, acetyl acetonyl, carboxyl, isocyanato, epoxy, aziridinyl, acyloyl halide, and cyclic anhydride groups.
- 20 15. The composition of claim 12 wherein polymeric photoinitiator is prepared by the reaction of a polymer having a plurality of pendent reactive functional groups with an co-reactive compounds having photoinitiator group.
- 25 16. The composition of claim 1 which comprises an amount of said second component sufficient to provide more than two crosslinks per first component oligomer chain.
17. The composition of claim 1 which comprises:
 (a) from 20 to 99.9 parts by weight of said first component oligomer, and
 (b) from 99.9 to 0.1 parts by weight of said second component oligomer,
30 wherein the composition, when crosslinked, can absorb at least 50 wt.% water.
18. The composition of claim 1 wherein said first component oligomer comprises

- (a) from 20 to 99 parts by weight of polymerized monomer units derived from an ethylenically-unsaturated monomer having a pendent poly(alkylene oxide) group;
- 5 (b) from 0.1 to 35 parts by weight of polymerized monomer units derived from of an ethylenically-unsaturated monomer having a pendent polymerizable functional group;
- (c) from 0 to 50 parts by weight of polymerized monomer units derived from a polar monomer;
- 10 (d) from 0 to 20 parts by weight of polymerized monomer units derived from a hydrophobic monomer;
- (e) from 0 to 10 parts by weight of at least one other monomer.

19. The oligomer composition of claim 18 wherein said polar monomer c), when present, is selected from the group consisting of substituted (meth)acrylamides, N-vinyl pyrrolidone, N-vinyl caprolactam, acrylonitrile, N-vinyl acetamide, tetrahydrofurfuryl acrylate, acrylamides, and mixtures thereof.

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20. The composition of claim 1 wherein said second component oligomer comprises
- 20 (a) from 20 to 99 parts by weight of polymerized monomer units derived from an ethylenically-unsaturated monomer having a pendent poly(alkylene oxide) group;
- (b) from 0.1 to 35 parts by weight of polymerized monomer units derived from an ethylenically-unsaturated monomer having a pendent polymerizable functional group;
- 25 (c) from 0 to 35 parts by weight of polymerized monomer units derived from a polar monomer;
- (d) from 0 to 20 parts by weight of polymerized monomer units derived from a hydrophobic monomer;
- (e) from 0 to 10 parts by weight of at least one other monomer.

30 21. The composition of claim 1 further comprising a non-polymeric photoinitiator.

22. A crosslinked composition comprising the composition of claim 1, having an average molecular weight between crosslinks of ≥ 1000 .
23. A process for making a substrate bearing a coating of a crosslinked polymer composition on at least one surface thereof, comprising the steps of:
- (a) coating onto said substrate the oligomer composition of claim 1; and
 - (b) photochemically crosslinking said first component oligomer and second component oligomer, in the presence of a photoinitiator, by forming covalent bonds between said pendent, free-radically polymerizable functional groups of said first component oligomer said second component oligomer.
24. The process of claim 23 wherein said oligomer composition has been partially converted to a coatable viscosity of from 750 to 7,500 cPs at 22°C prior to step a.
25. The process of claim 23 wherein said oligomer composition comprises
- (a) per 100 parts by weight of said first component, an amount of said second component sufficient to provide more than two crosslinks per first component oligomer chain;
 - (b) less than 2 parts by weight residuals content; and
 - (c) from 0.01 to about 5.0 parts by weight of a photoinitiator.
26. The process of claim 23 wherein said first component oligomer comprises:
- (a) from 20 to 99 parts by weight of polymerized monomer units derived from an ethylenically-unsaturated monomer having a pendent poly(alkylene oxide) group;
 - (b) from 0.1 to 35 parts by weight of polymerized monomer units derived from an ethylenically-unsaturated monomer having a pendent polymerizable functional group;
 - (c) from 0 to 50 parts by weight of polymerized monomer units derived from a polar monomer;
 - (d) from 0 to 20 parts by weight of polymerized monomer units derived from a hydrophobic monomer;

(e) from 0 to 10 parts by weight of at least one other monomer.

27. The process of claim 23 wherein the molecular weight (M_n) of said first oligomer is less than the entanglement molecular weight.

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28. The process of claim 23 wherein the average degree of polymerization of the first and second component oligomers is ≤ 300 .

29. An absorbent dressing comprising a crosslinked hydrophilic gel absorbent layer of claim 1.

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30. The absorbent dressing of claim 29 comprising:
a permeable facing layer,
a backing layer bonded to said facing layer at the periphery, and
a hydrophilic gel absorbent layer disposed between the backing and facing layer.

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31. The absorbent dressing of claim 30 having a layer of pressure sensitive adhesive on at least a portion of the front surface of the facing layer.

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32. The absorbent dressing of claim 30 wherein the gel layer further comprises a pharmacologically active agent.

33. The absorbent dressing of claim 30 wherein the gel layer further comprises a hydrocolloid.

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34. The absorbent dressing of claim 30 wherein the gel layer further comprises a patterned surface.